<u>Remarks</u>

Entry of the amendments, reconsideration of the application, as amended, and allowance of all pending claims are respectfully requested. Claims 1, 3-21, 23-42 and 44-54 remain pending.

With the above amendments, applicants are making a bonafide attempt to place this application in condition for allowance. Without acquiescing to the rejections, applicants are amending the claims to more clearly indicate that the measurement data obtained is individualized data for selected components of a channel. The individualized measurement data is used to determine utilization for each component of at least two components of the channel. Support for these amendments can be found in the original claims, as well as throughout the specification. Thus, no new matter has been added.

In the Office Action dated January 30, 2004, claims 1-5, 10-16, 18-25, 30-34 and 36-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Galbraith et al. (U.S. Patent No. 5,265,240). Claims 6-7, 17, 26-27 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Galbraith and Blasciak (U.S. Patent No. 4,845,615); and claims 8-9 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Galbraith and LANQuest by Novell®. Applicants respectfully, but most strenuously, traverse these rejections for the reasons below.

In one aspect, applicants' invention is directed to measuring the utilization of individual components of channels. That is, a channel has a plurality of individual components and each selected individual component is monitored and measured to determine the utilization of that particular component of the channel. This is advantageous because the modern channels, such as FICON channels, are able to multiplex many I/O operations at the same time and can pipeline the execution of channel programs, and thus, measuring the utilization of individual components of a channel facilitates planning for those channels. Further details regarding a channel that has a plurality of components are described below.

Referring to FIG. 4 of applicants' specification, as one example, channel 116 includes a plurality of components, such as, for instance, a channel processor 408, an internal PCI bus 406 from the processor to the adapter, and an adapter card 410 (e.g., a fibre channel adapter). The

channel processor is responsible for interpreting the channel command words and moving data to and from host memory to channel memory 400. The PCI bus moves instructions and data from channel processor storage 400 to adapter 410. The fibre channel adapter moves instructions and data from the PCI bus to the external fabric attached control units 412. Depending on the type of channel programs executed by the system, each of the three components of the channel may reach the limits of its capacity separately.

For example, small channel programs that include a few channel command words, but transfer a huge amount of data, have very little use of channel processor 408, but cause a very high utilization on internal PCI bus 406. However, a very long channel program that includes many channel command words, but only transfers very small amounts of data, requires very high utilization of the channel processor, but little use of the internal PCI bus and fibre channel adapter. Thus, no single number can adequately represent the channel utilization, since the components of the channel perform different tasks and can reach saturation at different points, depending on the nature of the I/O request for the applications using the channel. Further, many different applications can execute simultaneously on the channel, each with different characteristics and stressing different components of the channel at the same time. Therefore, in order for a customer to perform capacity planning and to correctly identify the resource of the channel that may be the bottleneck, each component of the channel is reported on separately. This allows the customer to identify the applications' I/O characteristics that can be added without saturating the channel, or that can be removed to avoid saturation.

In one particular aspect, applicants claim a method (e.g., claim 1) for determining utilization of channel components of a computing environment. The method includes, for instance, obtaining individualized measurement data for each component of selected multiple components of a plurality of components of a channel; and using said individualized measurement data to determine utilization for each component of at least two components of said selected multiple components. Thus, in applicants' claimed invention, measurement data is obtained for each component of selected multiple components of a channel and that measurement data is individual to each component. Further, the individualized measurement data is used to determine utilization for each component of at least two components of the selected multiple components. Thus, utilization is determined for a particular component of a channel. This is very different from the teachings of Galbraith.

Galbraith teaches obtaining a single utilization value for a channel, as a whole. This is explicitly stated throughout Galbraith. For instance, in the Abstract, it states, "Provides a method for measuring the busy utilization time for I/O channel used by any of plural operating systems (OSs) in a CEC." The utilization time is measured for the entire I/O channel. There is no discussion of measuring the individual components of a channel, as claimed by applicants. Galbraith disregards the individual components that make up a channel. There is no discussion or desire to measure the individual components of a channel or how such measurements would be taken. Galbraith simply treats the channel as a whole and is not concerned with the individual components of the channel.

Support for the rejection is indicated in the Office Action in which it states:

> Galbraith discloses a plurality of OS, and each OS has its own assigned storage portion (claim 1, first limitation) for receiving/dispatching data. Galbraith discloses measuring each OS' activity individually; hence, Galbraith discloses measurement data for multiple components of said plurality of components, and measuring utilization for each of the multiple components. Hence, the claim is anticipated by Galbraith.

Applicants respectfully submit that the teaching of measuring operating system's activity individually is not a teaching of applicants' claimed invention. Applicants are not claiming the measuring of each operating system's activity individually, but instead, are claiming the obtaining of individualized data for components of a channel and using that data to determine utilization of each selected component of the channel. Applicants are measuring individual components of a channel and not operating systems. Galbraith fails to describe, teach or suggest obtaining individualized measurement data for each selected component of a channel. Galbraith fails to describe, teach or suggest using the individualized measurement data to determine utilization of each component of at least two components of a channel. Instead, Galbraith treats the channel as a whole, instead of looking at its individual components. Since Galbraith fails to describe, teach or suggest one or more features of applicants' claimed invention, applicants respectfully submit that their invention is patentable over Galbraith, and respectfully request withdrawal of the §102 rejection of claim 1, and similar independent claims.

The dependent claims are patentable for the same reasons as the independent claims, as well as for their own additional features. The additionally cited art, Blasciak and LANQuest do

POU919990176US1   - 15 -

not overcome the deficiencies of Galbraith. As a matter of fact, LANQuest specifically describes a system level task in which they do not attempt to isolate and measure individual variables. This is the opposite of applicants' claimed invention. Thus, applicants respectfully request an indication of allowability for claim 1, any similar independent claims, and all claims that depend therefrom.

In a further aspect, applicants claim a method of determining utilization of channels of a computing environment in which the computing environment includes a plurality of logical partitions (e.g., claim 20). The method includes, for instance, obtaining, on behalf of a logical partition involved in determining utilization of a channel, measurement data for the channel, the measurement data being representative of use of the channel by the logical partition and representative of use by one or more other logical partitions of the plurality of logical partitions; and using the measurement data to determine utilization of the channel. Thus, in this aspect of applicants' claimed invention, the measurement data obtained on behalf of a particular logical partition is measurement data representative of use by a plurality of logical partitions (e.g., the logical partition involved in determining the utilization, as well as one or more other logical partitions). This is very different from the teachings of Galbraith.

Although Galbraith teaches a plurality of logical partitions, Galbraith does not teach or suggest that measurement data obtained on behalf of a particular logical partition is representative of use by multiple logical partitions. Instead, in Galbraith, the measurement data for each logical partition is exclusive for that logical partition. This is explicitly stated in Galbraith. For example, in Col. 2, lines 12-14, it is stated "The two OSs must be provided measurements which do not indicate the other OSs use of the shared I/O resources." Therefore, the measurements provided in Galbraith are for a single operating system (i.e., a single logical partition), and not for multiple logical partitions, as claimed by applicants. Thus, applicants respectfully submit that Galbraith does not anticipate applicants' claimed invention.

Applicants respectfully submit that they are not simply claiming measuring the utilization for each logical partition, but instead, are explicitly claiming that the measurement data obtained for a particular logical partition is representative of use of the channel by multiple logical partitions. That is, the measurement data is representative of use of the channel by the logical partition involved in determining utilization of the channel, as well as use by one or more other

logical partitions. There is no description, teaching or suggestion in Galbraith that the measurement data being obtained for a particular logical partition represents a plurality of logical partitions. Instead, in Galbraith, each logical partition only obtains the information for that particular logical partition.

Thus, Galbraith does not describe, teach or suggest applicants' claimed invention. Based on the foregoing, applicants respectfully request an indication of allowability for claim 20, any similar independent claims, and all claims that depend therefrom.

Should the Examiner wish to discuss this case with applicants' attorney, please contact applicants' attorney at the below listed number.

Respectfully submitted,

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Dated: April 30, 2004.

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